

Three Technology Categories Scheduled for Testing

Verification tests are expected to begin during the next several months for three categories of environmental monitoring technologies—two for air and one for water—in the Advanced Monitoring Systems (AMS) pilot. The AMS pilot is one of 12 pilots in the U.S. Environmental Protection Agency's Environmental Technology Verification (ETV) program and is being conducted by Battelle.

Vendors interested in participating in the verification tests must submit to Battelle an Application for Technology Verification (AFT) form that provides detailed information about the technology, including operating requirements, limitations, participation in previous testing programs, and its current uses. Vendors must make several commitments, e.g., provide a company representative as the point of contact and participation leader during the verification process; commit the technology and an operator, if needed, for the duration of the test; and pay a participation fee, which is a portion of the estimated cost of the test not covered by EPA funding. EPA funds will be available until September 2000 to partially support verification testing as an incentive to encourage vendor participation as the pilot moves toward privatization of the process.

The steps in the verification testing process are shown in the chart on page 0. Descriptions of the AMS pilot's Test/Quality Assurance Plan, Quality Management Plan, and Generic Protocol are also provided on page 0. Definitions of other terms are provided in the *Q&A* and *Abbreviations* sections on page 4. The technology categories currently scheduled for testing are in different stages of the AMS verification process, as indicated by the following summaries.



Six companies are participating in the verification test of NO/NO₂ analyzers. An example of this technology is the portable gas analyzer (above). (Photo of the PG-250 model was provided by Horiba Instruments Incorporated, Irvine, CA.)

- ◆ **NO/NO₂ Emission Analyzers.** Examples of this technology category include ozone chemiluminescence monitors and portable gas analyzers (see accompanying photo). Vendors planning to participate in the initial verification test for this technology category are at Step 5 on the chart on page 0. Representatives of six companies met in August with Battelle and EPA staff to discuss the verification testing process, determine parameters for the test, and agree on a test schedule (see article on page 1, Vol. 1, Number 3, *The Monitor*, Summer 1998). The Test/QA Plan for this technology category was distributed to vendors, EPA representatives, and selected stakeholders for review and comment.

Battelle has identified and obtained resources (e.g., staff, equipment, facilities) necessary to perform the test for this technology category, which is scheduled to begin January 11. Six companies are participating in the NO/NO₂ test: ECO Physics, Inc., Ann Arbor, MI; ECOM Amaerica Ltd., Duluth, GA; Energy Efficiency Systems, Westboro, MA; Horiba Instruments, Pittsburgh, PA; Testo, Inc., Flanders, NJ; and TSI, Incorporated, Shoreview, MN. The test will be conducted at Battelle's facilities in Columbus, Ohio, and is expected to take two weeks to complete. Completing the EPA certification and Battelle's final report on the test will take approximately four months after completion of the test.

- ◆ **Home Test Kits/Portable Analyzers for Metals** in water. Examples of this technology category include a colorimetric test kit for copper in water and a hand-held instrument for on-the-spot analysis of water samples. Vendors for this technology category are at Step 2 and 3 of the chart, i.e., technologies are still being solicited and Application Packages are being sent out to all identified vendors whose technologies qualify in this category. Steps 4 and 5 for these vendors are expected to be completed by early February and the verification test is planned for March or April.
- ◆ **Fine Particulate Air Monitors.** Examples of this technology category include a particle sizer spectrometer

Continued on page 2



The AMS Pilot is one of 12 pilots in the U.S. Environmental Protection Agency's Environmental Technology Verification Program

Continued from page 1

and a near real-time monitor for "black carbon" in aerosols. Vendors for this technology category are also at Steps 2 or 3 of the chart, having received either Requests for Technology forms or Application Package forms. Battelle expects to conduct a meeting in February or March for vendors interested in participating in the verification test for this technology category. The verification test for this category is expected to be conducted this spring.

EPA and Battelle are partners in the AMS pilot, whose objective is to verify the performance of commercially ready advanced monitoring technologies for air, water, and soil. The goal of the ETV program is to accelerate the acceptance of environmental technologies. Third-party verification tests provide potential purchasers and regulatory agencies with an independent and credible assessment of the technology they are buying or permitting. The eight technologies to be tested in the first round--four each in air and water--were identified as those most needed by members of the AMS pilot's air and water stakeholder committees. In addition to the three technologies named above, five others will be tested during 1999 by the AMS pilot.

Air

Automated monitors with sample inlets specially designed for speciation of volatile organic compounds in ambient air

Real-time field monitors for measurement of speciated organics and/or inorganics from point sources.

Water

Chemical-specific field probes for monitoring volatile organic compounds or synthetic organic compounds in groundwater

Real-time field instruments for monitoring pathogens or synthetic organic compounds in surface water

Rapid field measurement technology to determine the "wholesomeness" of seafood (e.g., finfish and shellfish) by measuring the presence of polycyclic aromatic hydrocarbons and other contaminants.

Abbreviations

AFT – Application for Technology Verification

AMS – Advanced Monitoring Systems pilot

EPA – U.S. Environmental Protection Agency

ETV – Environmental Technology Verification

MARAMA – Mid-Atlantic Regional Air Management Association

NAFTA – North American Free Trade Agreement

NO – nitrogen oxide

NO₂ – nitrogen dioxide

RFT – Request for Technology

Page 2

Meet the Stakeholder Committees

In each issue of *The Monitor* two members of the AMS pilot's stakeholder committees will be spotlighted--one each from the air and water committees.



**Susan Wierman,
Air Stakeholder
Committee**

Ms. Wierman is the executive director of the Mid-Atlantic Regional Air Management Administration (MARAMA), which is a nonprofit association of state and local air pollution control agencies located in Baltimore, MD. MARAMA conducts training workshops, special studies, and other activities to help member agencies work together to prevent and reduce air pollution. She represents MARAMA at meetings of the North American Research Strategy for Tropospheric Ozone for the northeast, U.S. EPA's Standing Air Monitoring Work Group, and the Monitoring Committee of the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials. Active in air pollution control work since 1977, Ms. Wierman has worked with local and state governments in Washington, Minnesota, and Maryland. Before joining MARAMA, she was deputy director of Maryland's Air and Radiation Management Administration for eight years. While working in that agency, Ms. Wierman edited several reports to the Maryland General Assembly on air pollution issues, helped write the state's air toxics control regulations, and worked with the Department of Natural Resources to produce a report on the effects of acid deposition in Maryland. She received bachelors (cum laude) and masters degrees from the University of Washington in Seattle and has a Certificate in Continuing Engineering Studies from Johns Hopkins University in Baltimore.



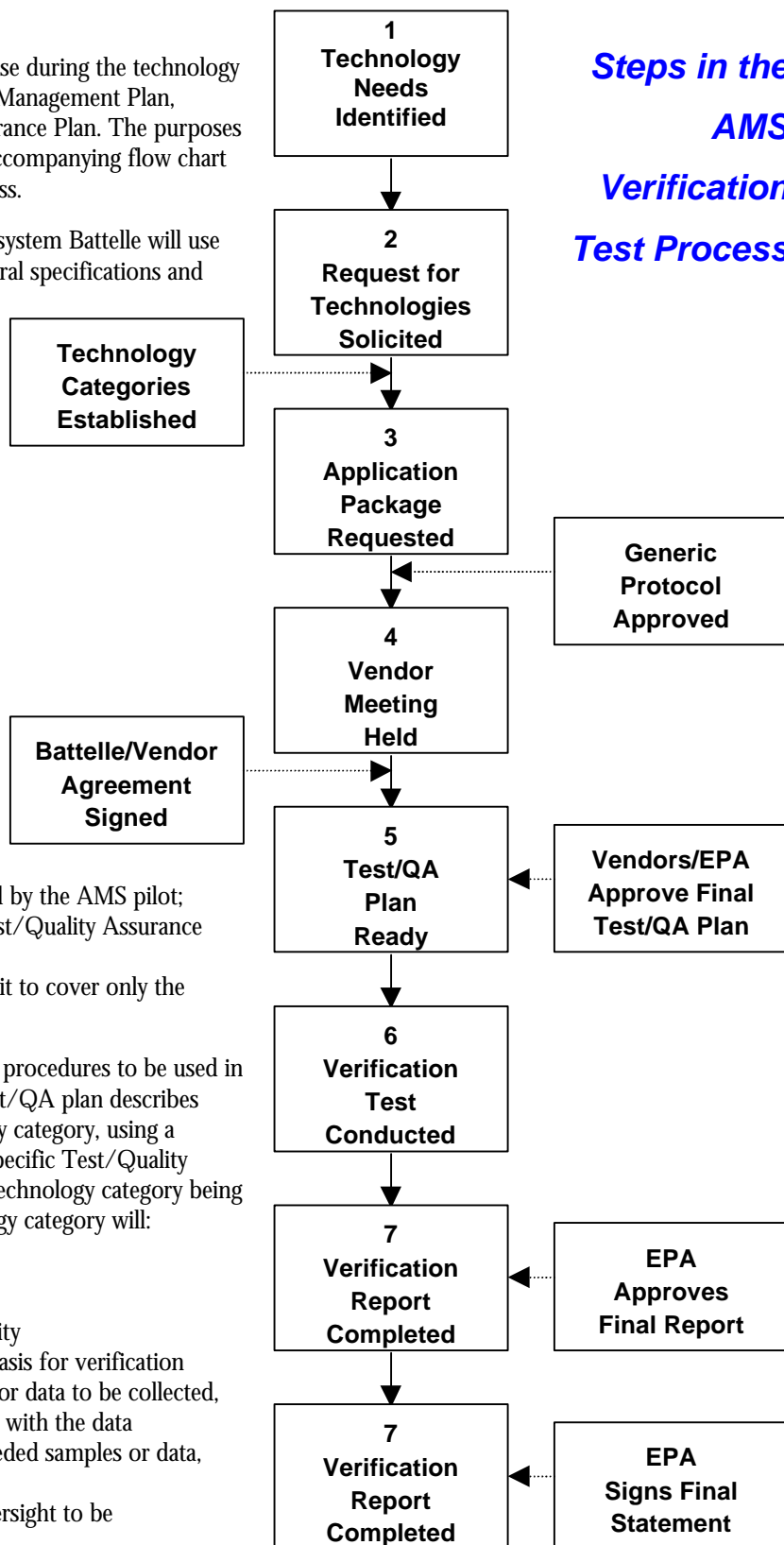
**Geoff Dates,
Water Stakeholder
Committee**

Mr. Dates is the acting executive director/science coordinator for the River Watch Network, a national nonprofit conservation organization that works with citizens' groups and schools to monitor, restore, and protect the ecological integrity of the nation's rivers. A River Watch Network staff member since 1990, he currently provides organizational, training, and technical assistance to groups working at various rivers in New England, the Rio Grande River in Texas and New Mexico, and the Mississippi River in Minnesota. Previously, Mr. Dates worked as a planner for the New England River Basins Commission; public issues program manager for the Montshire Museum of Science in Hanover, NH; and Upper Valley regional director of the Connecticut River Watershed Council. He is the author of three River Watch Network publications: *Benthic Macroinvertebrate Monitoring Manual*, *River Monitoring Study Design Workbook*, and *Program Operating Guide*. He has contributed to several other publications, including the U.S. EPA's *Volunteer Stream Monitoring: A Methods Manual*, and authored three articles for *The Volunteer Monitor*.

Key Tools Will Support Process

Three important tools have been developed by Battelle for use during the technology verification process under the AMS pilot--the AMS Quality Management Plan, Generic Verification Protocol, and initial Test/Quality Assurance Plan. The purposes and contents of each document are described below. The accompanying flow chart indicates where these documents fit in the verification process.

- ♦ **The Quality Management Plan** describes the quality system Battelle will use to conduct the AMS pilot, which is consistent with federal specifications and guidelines. The document lists activities being used to ensure the quality of products and services provided for the AMS pilot, including personnel qualification and training, procurement of materials and services, documents and records, computer hardware and software, planning, work processes, assessment and response, and quality improvement provisions. The two main parts of the plan define management systems and collection and evaluation of environmental data.
- ♦ **The Generic Verification Protocol** lists the general procedures the AMS pilot will follow for soliciting, verifying, and reporting on all monitoring technologies tested. It serves as a guide for conducting all steps in the verification process. Thus the protocol does not provide details for a specific technology's verification test but presents the framework within which each specific test is to take place. The purposes of the Generic Verification Protocol are to:
 - Promote uniformity for all verification tests conducted by the AMS pilot;
 - Provide the framework for developing the detailed Test/Quality Assurance Plan for each technology category to be tested and
 - Simplify the Test/Quality Assurance Plan by allowing it to cover only the technology verification test it applies to.
- ♦ **The Test/Quality Assurance Plan** states in detail the procedures to be used in the verification test for a specific technology. Each Test/QA plan describes how the test is to be conducted for a specific technology category, using a specified standard method. The components of each specific Test/Quality Assurance Plan will vary somewhat, depending on the technology category being tested. In general, the Test/QA plan for each technology category will:
 - Identify participating organizations and their roles
 - Describe participating technologies
 - Identify the location and nature of the test site or facility
 - Describe methods or standards that will serve as the basis for verification
 - List the types and numbers of samples to be analyzed or data to be collected, as well as comparisons or statistical analyses to be made with the data
 - Define field procedures to be carried out to obtain needed samples or data, including locations, schedules, collection media, etc.
 - Describe quality assurance control procedures and oversight to be implemented during the test and
 - Define data management and reporting procedures.



To develop these documents, Battelle referred to protocols and test procedures used by other organizations testing similar technologies and received input from stakeholder committee members, staff members from the U.S. EPA, and interested vendors. If necessary, conference calls and meetings are scheduled with vendors and others to reach consensus on specific testing procedures and then the Test/QA Plan is finalized. The final plan becomes the basis for verification of the participating vendors' technologies.

Three technology categories are scheduled for verification tests under the AMS pilot during the next few months, as indicated in the article on page 1.

Q&A

What is the difference between the RFT and the AFT?

The Request for Technology (RFT) form is used by Battelle to solicit the participation and gauge the interest of vendors interested in having the performance of their technology verified. Returning the form does not necessarily signal a commitment on the part of the vendor. The Application for Technology Verification (AFT) is sent to the interested vendor as a follow up to the RFT to obtain additional information from the company about the technology and obtain the company's commitment to participate in the verification test. Additional details about the AFT are in the second paragraph of the article on page 1.

How long will the pilots continue?

EPA's ETV is in a five-year pilot phase (1995 to 2000) to test various partner models, procedural alternatives, market demand, and public response. The initial 12 pilots, phased in over the past three years, are focusing on major environmental media (e.g., air, water) and categories of environmental technologies, such as the NO/NO₂ analyzers. Costs and effectiveness will be evaluated and, in 2001, EPA is to make recommendations to Congress as to whether and in what form the ETV program should continue.

How many technologies have been verified?

As of December 1998, 25 technologies have been verified under the ETV program. Nineteen of these have available verification statements issued by EPA and final reports issued by the pilot partners. ETV's goal is to have 300 technologies verified by 2005. Go to <http://epa.gov/etv>, then click on List of Verified Technologies. The verification statements and test reports can be printed out or downloaded.

Upcoming Events

January 11, 1999

Verification test for initial air technology category, NO/NO₂ emission analyzers, Columbus, Ohio

February 1999

Third meetings for stakeholder committees:

- Air Stakeholder Committee, February 22-23, San Francisco, CA
- Water Stakeholder Committee, February 00-00, Albuquerque, NM

March 7-12, 1999

Pittcon® '99, Orange County Convention Center, Orlando, FL

Spring 1999

Verification tests for initial water technology category, home test kits/portable analyzers for metals in water, and second air technology category, fine particulate air monitors

June 20-24, 1999

A&WMA 92nd Annual Meeting & Exhibition, St. Louis, MO

FYI: ETV Update...

Penny Hansen, coordinator of the ETV program, presented a status report to representatives of the 12 pilot partners and EPA offices in Albuquerque, N.M., October 27-29. The following points are of general interest:

- ♦ ETV's key goal was to establish 12 pilots in the first three years and all 12 are underway. ETV was initiated in October 1995.
- ♦ By October, 25 technologies had been verified and 55 technologies were in the process of being verified. Final verification reports and statements for the 25 technologies, as well as protocols and verification test plans, are available on the ETV web site (<http://www.epa.gov/etv>).
- ♦ The web site also contains general information about the ETV program, detailed information about each pilot, lists of contacts for the 12 pilots, a calendar of events, stakeholder lists, and meeting summaries. During the fiscal year ending September 30, 1998, approximately 76,000 hits were recorded on the ETV web site.
- ♦ Ten of the 12 pilots have established stakeholder committees to provide independent input to the pilots. The 12 committees have a total of 512 members from diverse perspectives, including regulators, regulated groups, technology users, professional and trade associations, environmental groups, investment interests, and insurance underwriters.
- ♦ The ETV program implemented four quality criteria:
 - Fairness:** Testing was available to all vendors of commercial-ready technologies within the defined categories
 - Credibility:** Tests were performed by objective third parties; protocols and test plans were publicly available and capable of reproduction
 - Transparency:** Test results were publicly available
 - Quality:** Quality management was applied; data were determined to be at an acceptable level for verification.

Ms. Hansen also reported that international interest in the ETV program is high, as indicated by responses from NAFTA's Council on Environmental Cooperation, the World Bank, the United Nations, the World Health Organization, the State Department, the Agency for International Development, and many nations interested in cooperative or reciprocity arrangements. International inquiries to the ETV web site during the 1998 fiscal year totaled approximately 9,000.